

Amendments to the Claims

Please amend claims 1, 4-7, 9, 15, 18, 28, 31, and 32. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

1. (Currently Amended) A method for transmitting information from a computer to a server comprising the steps of:

- (a) assigning a Mobile Internet protocol (IP) address to customer premise equipment (CPE) associated with the computer;
- (b) registering the Mobile IP address with a Mobile IP home agent associated with a home network for the assigned Mobile IP address;
- (c) initiating a point-to-point (PPP) session from the computer to a L2TP access concentrator (LAC) associated with the CPE;
- (d) encapsulating IP data from the computer into PPP frames and sending it to the LAC;
- (e) encapsulating the PPP frames into L2TP packets at the LAC;
- (f) directing the L2TP packets to a Mobile foreign agent associated with a mobile base station via mobile communications;
- (g) further encapsulating the L2TP packets at the Mobile IP foreign agent into Mobile IP packets;
- (h) transmitting the ~~encapsulated~~ Mobile IP packets to the Mobile IP home agent associated with a base station;
- (i) unencapsulating the transmitted Mobile IP packets at the Mobile IP home agent into L2TP packets;
- (j) forwarding the ~~unencapsulated~~ L2TP packets to the L2TP network server ~~LNS~~ (LNS) associated with the Mobile home agent;
- (k) unencapsulating the forwarded L2TP packets at the LNS into PPP frames; ~~and~~
- (l) further unencapsulating the PPP frames into IP packets;
- ~~(+)(m) forwarding the unencapsulated PPP frames~~ IP packets to the server;

~~(m)~~(n) sending IP packets intended for the computer from the server to the LNS where they are encapsulated into PPP frames, further encapsulating the PPP frames into L2TP packets;

~~(n)~~(o) sending the ~~encapsulated~~ L2TP packets to the Mobile home agent where they are encapsulated as Mobile IP packets;

~~(o)~~(p) directing the Mobile IP packets from the Mobile home agent to the foreign agent associated with the registered CPE of the destination computer;

~~(p)~~(q) unencapsulating the Mobile IP packets at the foreign agent to uncover L2TP ~~encapsulated PPP frames~~ packets;

~~(q)~~(r) sending the ~~encapsulated PPP frames~~ L2TP packets to the destination CPE and having the LAC associated with the CPE unencapsulate the L2TP packets into PPP frames; and

~~(r)~~(s) sending the PPP frames to the computer.

2. (Original) The method of claim 1 wherein movement of the PPP session is transparent to the computer and the server.

3. (Original) The method of claim 1 wherein movement of the PPP session is transparent to the LAC and the LNS.

4. (Currently Amended) The method of claim 1 further comprising the step of: ~~(s)~~(t) determining whether the CPE detects a new base station.

5. (Currently Amended) The method of claim 4 further comprising the steps of:

if a new base station is detected in step (s),

~~(t)~~(u) re-registering with the Mobile IP home agent via a new Mobile IP foreign agent associated with the new base station;

~~(u)~~(v) acknowledging the re-registering; and

~~(v)~~(w) transmitting the L2TP packets from the LNS to the LAC via the Mobile IP home agent to the new Mobile IP foreign agent.

6. (Currently Amended) The method of claim 5 wherein step ~~(t)~~ (u) further comprises informing the Mobile IP home agent of a new location of the CPE.
7. (Currently Amended) The method of claim 5 wherein the steps ~~(t)~~ (u) and ~~(u)~~ (v) are transparent to the computer and the server.
8. (Original) The method of claim 1 wherein the PPP session utilizes PPPoE (point-to-point protocol over Ethernet) for transporting the PPP frames over an Ethernet network.
9. (Currently Amended) A system for transmitting information from a computer to a server, the system comprising:
 - customer premise equipment (CPE) associated with the computer;
 - said CPE having a Mobile Internet protocol (IP) address assigned thereto;
 - a Mobile IP home agent associated with a home network for the assigned Mobile IP address, wherein the Mobile IP home agent is registered with the Mobile IP address;
 - a L2TP access concentrator (LAC) associated with the CPE which is capable of establishing a point-to-point protocol (PPP) session from the computer to the L2TP access concentrator (LAC);
 - an L2TP network server (LNS) associated with the server and being capable of establishing an L2TP (layer 2 tunneling protocol) session between it and the LAC, wherein IP data are encapsulated into PPP frames and then into L2TP packets at the LNS and the ~~encapsulated~~ L2TP packets are sent to the LAC, and wherein the L2TP packets being intercepted by the Mobile IP home agent where they are encapsulated in Mobile IP packets;
 - a Mobile IP foreign agent associated with a base station wherein the Mobile IP packets are unencapsulated at the Mobile IP foreign agent into L2TP packets and the ~~unencapsulated~~ L2TP packets are forwarded to the LAC via the base station, the L2TP packets forwarded to the LAC being unencapsulated by the LAC into PPP frames and the ~~unencapsulated~~ PPP frames being forwarded by the LAC to the computer.

10. (Original) The system of claim 9 wherein movement of the PPP session is transparent to the computer and the server.
11. (Original) The system of claim 9 wherein movement of the PPP session is transparent to the LAC and the LNS.
12. (Original) The system of claim 9 wherein the CPE detects whether it is within range of a new base station.
13. (Original) The system of claim 12 further wherein:
if a new base station is detected, the CPE re-registers with the Mobile IP home agent informing it of a new Mobile IP foreign agent associated with the new base station, and
the Mobile IP home agent transmits the L2TP packets from the LNS to the LAC via the new Mobile IP foreign agent.
14. (Original) The system of claim 13 wherein the CPE notifies the Mobile IP home agent of a new location of the CPE.
15. (Currently Amended) The system of claim 13 wherein ~~the~~ Mobile IP [[M]]mobile [[N]]node functionality is re-registered and acknowledged transparently to the computer and the server.
16. (Original) The system of claim 9 wherein the PPP session utilizes PPPoE (point-to-point protocol over Ethernet) for transporting the PPP frames over an Ethernet network between the computer and the CPE.
17. (Original) The system of claim 9 wherein the CPE comprises a Mobile IP mobile node functionality and LAC (L2TP access concentrator) functionality.

18. (Currently Amended) A system for transmitting information from a ~~computer~~ user device to a server on a computer network, the system comprising:

a user device being coupled to customer premise equipment (CPE) that connects to a base station over a wireless link, the CPE having an assigned Mobile Internet Protocol (IP) address, the CPE including a Mobile IP mobile node and a Layer 2 Tunneling Protocol (L2TP) access concentrator (LAC);

the mobile node of the CPE registering the Mobile IP address of the CPE with a Mobile IP home agent of a home network, the mobile node registering a Mobile IP foreign agent with the home agent each time the CPE connects to a base station so that IP packets destined for the Mobile IP address of the CPE are encapsulated and forwarded to the foreign agent that corresponds to that base station;

~~a computer network;~~

~~a L2TP access concentrator (LAC);~~

[[a]] the user device being connected to the LAC via a PPP (point-to-point protocol) session for accessing [[the]] a server on a computer network;

the LAC being connected to an L2TP network server (LNS) on the computer network over a wireless link through an L2TP tunnel;

the user device communicating with the server on the network by transmitting PPP frames containing IP packets destined for the server over the PPP session to the LAC, tunneling the PPP frames from the LAC to the LNS over the wireless link through the L2TP tunnel, terminating the L2TP tunnel and the PPP session at the LNS, and forwarding the IP packets contained in the PPP frames from the LNS to the server on the network

~~a customer premise equipment (CPE) associated with the user device network and having a Mobile Internet protocol (IP) address assigned thereto;~~

~~—— a home network with which the Mobile IP address is registered;~~

~~—— a Mobile IP mobile node;~~

~~—— a Mobile IP foreign agent associated with a base station wherein the Mobile IP foreign agent is registered by the Mobile IP mobile node to a Mobile IP home agent associated with the home network wherein IP packets destined to the Mobile IP mobile node are encapsulated and forwarded to the registered Mobile IP foreign agent; and~~

~~an LNS (L2TP network server);~~

~~wherein a PPP (point to point protocol) session is terminated from the computer; and~~

~~wherein an L2TP (layer 2 tunneling protocol) tunnel is terminated from the LAC.~~

19. (Original) The system of claim 18 wherein the LNS is associated with L2TP tunnels initiated at other LACs and is a termination point of the L2TP tunnels and PPP sessions contained within the L2TP tunnels.
20. (Original) The system of claim 18 wherein it is determined when the CPE is within range of a new base station.
21. (Original) The system of claim 20 wherein, if it is determined that the CPE is within the range of the new base station, the CPE is re-registered with the Mobile IP home agent via a new Mobile IP foreign agent associated with the new base station.
22. (Original) The system of claim 21 wherein the Mobile IP home agent is informed of a new location of the CPE.
23. (Original) The system of claim 21 wherein, upon acknowledgment of the re-registered CPE, the Mobile IP home agent forwards the IP packets destined for the Mobile IP address, to the new Mobile IP foreign agent.
24. (Original) The system of claim 21 wherein the CPE is re-registered transparently to the computer and the server.
25. (Original) The system of claim 18 wherein the CPE comprises a Mobile IP mobile node functionality and LAC (L2TP access concentrator) functionality.
26. (Original) The system of claim 18 wherein the CPE is co-located within the user device.

27. (Original) The system of claim 18 wherein the CPE is separately located from the user device.
28. (Currently Amended) The system of claim 18 wherein the user device is selected from a group consisting of a general purpose computer, personal computer (PC), ~~Macintosh, Unix,~~ personal digital assistant (PDA), and mobile telephone.
29. (Original) The system of claim 18 wherein movement of the PPP session is transparent to the computer and the server.
30. (Original) The system of claim 18 wherein movement of the PPP session is transparent to the LAC and the LNS.
31. (Currently Amended) A method for transmitting information from a computer to a server comprising the steps of:
- (a) registering a Mobile IP address, for customer premise equipment (CPE) associated with the computer, at a Mobile IP home agent associated with a home network for the assigned Mobile IP address;
 - (b) initiating a point-to-point protocol (PPP) session from the computer to a L2TP access concentrator (LAC) associated with the CPE;
 - (c) initiating layer 2 tunneling protocol (L2TP) session between the LAC and an L2TP network server (LNS) associated with the server;
 - (d) encapsulating data from the computer into PPP frames at the computer;
 - (e) directing the PPP frame data to the LAC where it is encapsulated as L2TP packets;
 - (f) sending the L2TP packets to a foreign agent at a mobile base station,
 - (g) encapsulating the L2TP packets at the foreign agent into Mobile IP packets;
 - (h) transmitting the ~~encapsulated~~ Mobile IP packets to the Mobile IP home agent where they are unencapsulated into L2TP packets;
 - (i) forwarding the L2TP packets to the LNS;

(j) unencapsulating the forwarded L2TP packets at the LNS into PPP frames; and
(k) terminating the PPP session, unencapsulating the PPP frames into IP packets, and forwarding the data from the computer in substep (d) to the server.

32. (Currently Amended) The method of claim 31 further comprising the steps of:

(l) sending ~~PPP frames~~ IP packets intended for the computer from the server to the LNS where they are encapsulated into PPP frames and then into L2TP packets;

(m) sending the ~~encapsulated PPP frames~~ L2TP packets to the Mobile home agent where they are encapsulated as Mobile IP packets;

(n) directing the Mobile IP packets from the Mobile home agent to the foreign agent associated with registered CPE of the destination computer;

(o) unencapsulating the Mobile IP packets at the foreign agent to uncover L2TP ~~encapsulated PPP frames~~ packets;

(p) sending the ~~encapsulated PPP frames~~ L2TP packets to the destination CPE and having the LAC associated with the CPE unencapsulate the L2TP packets into PPP frames; and

(q) sending the PPP frames to the computer.

33. (Original) The method of claim 31 wherein movement of the PPP session is transparent to the computer and the server.

34. (Original) The method of claim 31 wherein movement of the PPP session is transparent to the LAC and the LNS.

35. (Original) The method of claim 31 further comprising the step of: (r) determining whether the CPE detects a new base station.

36. (Original) The method of claim 35 further comprising the steps of:

if a new base station is detected in step (r),

(s) re-registering with the Mobile IP home agent via a new Mobile IP foreign agent associated with the new base station;

- (t) acknowledging the re-registering; and
- (u) transmitting the L2TP packets from the LNS to the LAC via the Mobile IP home agent to the new Mobile IP foreign agent.

37. (Original) The method of claim 36 wherein step (s) further comprises informing the Mobile IP home agent of a new location of the CPE.

38. (Original) The method of claim 36 wherein the steps (s) and (t) are transparent to the computer and the server.

39. (Original) The method of claim 31 wherein the PPP session utilizes PPPoE (point-to-point protocol over Ethernet) for transporting the PPP frames over an Ethernet network.